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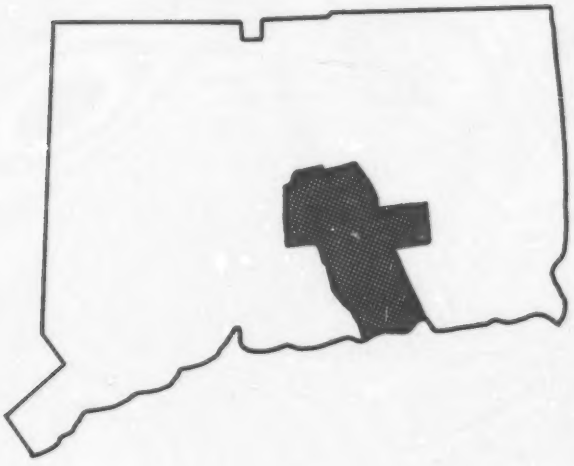
FLOOD INSURANCE STUDY

COMPLETED
82.
ORIGINAL

TOWN OF ESSEX, CONNECTICUT
MIDDLESEX COUNTY



MARCH 4, 1986

Federal Emergency Management Agency

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PUBLISHED SEPARATELY:

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Flood Insurance Rate Map

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FLOOD INSURANCE STUDY
TOWN OF ESSEX, CONNECTICUT

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the Town of Essex, Middlesex County, Connecticut, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates and assist the community in their efforts to promote sound flood plain management. Minimum flood plain management requirements for participation in the National Flood Insurance Program are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, flood plain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the state (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for the Falls River in this study represent a revision of the original analyses performed by CE Maguire, Inc., for the Federal Emergency Management Agency (FEMA), under Contract No. H-4560. The original work, which included the Connecticut River analysis, was completed in February 1979. The revised analysis for the Falls River was prepared by the New England Division of the U. S. Army Corps of Engineers for FEMA, under Inter-Agency Agreement No. EMW-E-0941. This updated analysis was completed in March 1984.

1.3 Coordination

On August 12, 1982, the detailed analyses were discussed at an initial Consultation and Coordination Officer's (CCO) meeting attended by representatives of FEMA, the Town of Essex, and the New England Division of the U. S. Army Corps of Engineers (COE - the study contractor).

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The Soil Conservation Service (SCS), the Connecticut Department of Environmental Protection, the Connecticut Department of Transportation, the U. S. Geological Survey (USGS), the Connecticut River Estuary Regional Planning Agency, the American National Red Cross, the Connecticut Water Company, and the Deep River Historical Society were contacted for various types of information. During the course of the work, specific information on peak discharge-frequency relationships, flood control channel and dam improvements, previous flood hazard evaluations, recent and impending flood plain development, and the extent of historic flooding were obtained, reviewed, and discussed with various community and state officials and local residents.

On January 22, 1985, the results of the study were reviewed at a final CCO meeting held with representatives of FEMA, the town, and the study contractor.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated area of the Town of Essex, Middlesex County, Connecticut. The area of study is shown on the Vicinity Map (Figure 1).

Riverine flooding from the Falls River was studied by detailed methods for its entire length within the corporate limits. Tidal flooding from the Connecticut River was also studied by detailed methods for its entire length within the corporate limits. The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction through March 1989.

Comstock Pond, Lord Pond, Birch Mill Pond, Vinney Hill Brook, the Mud River, and a small ponding area near River Road over the Falls River were studied by approximate methods. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon by, FEMA and the Town of Essex.

2.2 Community Description

The Town of Essex is located in the southeastern portion of Middlesex County in south-central Connecticut. It is bordered by the Town of Deep River to the north and west, the Towns of Lyme and Old Lyme to the east, and the Towns of Westbrook and Old Saybrook to the south. The total land area contained within the corporate limits of Essex is 12.2 square miles.

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FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF ESSEX, CT
(MIDDLESEX CO.)

APPROXIMATE SCALE
4000 0 4000 8000 12000 FEET

VICINITY MAP

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The population of Essex was approximately 5,000 in 1976, for a population density of approximately 410 persons per square mile. During the period from 1950 to 1970, the population of the town increased by 41 percent (Reference 1).

The topography of Essex features tidally affected lowland areas along the Connecticut River and rolling hills and rocky ledges in the western portion of the town. Elevations range from near sea level along the Connecticut River to 310 feet along the northern boundary of the town.

The predominant soil type along the Falls River is outwash sand and gravel deposited by glacial streams within the study area. Small areas of artificial fill consisting of sand and gravel are present in the vicinity of the Ivoryton Mill, the Valley Railroad, and State Route 9. Small areas of glacial till, a non-sorted, non-stratified deposit of debris ranging from clay-size particles to large boulders, are situated on the north-central shore of Mill Pond and at the eastern end of the study area. Also present from the east end of Mill Pond to the eastern extremity of State Route 9 is an area of alluvium. The alluvium consists of a water deposited mixture of sand, silt, and gravel. The stream also passes through a small area of exposed bedrock in the eastern portion of Mill Pond.

There are three major soil deposits along the Connecticut River in Essex, consisting of fill, till, and ice-contacted stratified drift. The ice-contact stratified drift consists of pebble gravel, cobbles, sand, and silt deposited by glacial meltwater streams in close proximity to the melting glacier ice. The ice-contact drift is present at the mouth of the Falls River (North Cove) and at the eastern end of South Cove. The artificial fill is also present in scattered areas along the upstream corporate limits. The till is located along the central and southern portions of South Cove. In addition, deposits of glacial outwash are present in the southern portion of North Cove and in the area of Middle Cove.

The climate of Essex is characterized by moderately warm summers with temperatures averaging 70.3 degrees Fahrenheit (°F), and cool winters with temperatures averaging 29.7°F. The average annual precipitation is approximately 50.3 inches and is evenly distributed throughout the year (Reference 2).

Essex includes in the unincorporated Villages of Centerbrook, Essex, and Ivoryton. To the east, the Village of Essex contains flood plains of the Connecticut River along with various harbors and coves which are the basis for the shipbuilding and boating industry that originated there. The Village of Centerbrook and Ivoryton, located to the west, represent the center of small industries located within the Town of Essex. In past years, the Falls River provided many sites for grist mills and saw mills.

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Essex is primarily a residential community, consisting mostly of single-family homes. Since 1970, almost 62 percent of the land has remained undeveloped. Future plans of development are limited to light residential, industrial, and commercial development in the midwestern and southwestern sections of Essex. Areas adjacent to the flood plains of the Falls River are already substantially developed with no significant future development anticipated.

Development along the flood plains of the Connecticut River is committed to the boating industry. This industry is limited to the servicing and construction of pleasure craft.

2.3 Principal Flood Problems

Prior to January 1978, the greatest floods of record in Essex occurred in March 1936 and September 1938. Record flood levels on the Connecticut River occurred in March 1936 as a result of snowmelt and heavy rains (Reference 3). Serious flooding was generally limited to areas along the flood plains of the Connecticut River. Extensive flooding occurred at the ends of Main Street, Pratt Street, and Ferry Street, causing damage to the Essex Yacht Club, the Essex Boat Works, and the Essex Paint and Chemical Company. During the flood of 1938, the maximum flood level on the Connecticut River crested only slightly lower than the 1936 elevation, and serious flooding along the river occurred once again. The 1936 and 1938 floods each had a recurrence interval of 50 years. Figure 2 shows the effects of the 1938 flood at one location within Essex.

Figure 2 - Looking east along Pratt Street toward the Connecticut River at the Essex Boat Works during the September 1938 flood.

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Essex also experienced severe flooding during the January 1978 flood as a result of frozen ground conditions, excessive snowmelt, high tide conditions, and excessive rainfall. The Falls River, which had caused only minimal problems during the floods of 1936 and 1938, overflowed and caused extensive flooding along its banks from Ivoryton downstream to River Road. The 1978 flood had a recurrence interval of approximately 100 years. Heavy rains from the June 1982 storm as well as several small dam failures also caused extensive flooding along the Falls River.

2.4 Flood Protection Measures

Presently, there are no existing or planned flood protection structures along any of the watercourses in Essex. As a flood protection measure, the town has called for the establishment of a 50-foot wide buffer strip along the Falls River in its development plans. Falls River Pond Dam, Mill Dam, Wrights Pond Dam, Messerschmidt Pond Dam, and several smaller dams exist along the Falls River. These dams are not used as flood control structures.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for flood plain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10, 2, 1, and 0.2 percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1 percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency and peak elevation-frequency relationships for the flooding sources studied in detail affecting the community.

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There are no streamflow records for the Falls River. The East Branch Eightmile River, a gaged stream with similar hydrologic characteristics, is located 5 miles northeast of Essex. The East Branch Eightmile River has a drainage area of 22.3 square miles. Discharge frequencies for the East Branch Eightmile River at North Lyme were developed by a statistical analysis of its 45 years of streamflow records using a log-Pearson Type III distribution and including the estimated recent June 1982 flood peak (Reference 4). The resulting peak discharges for the 10-, 50-, 100-, and 500-year frequency floods were used to compute estimated Falls River flows at Falls River Pond Dam (drainage area 17.2 square miles) by direct drainage area ratio. Flows were developed at other upstream locations on the Falls River by drainage area ratio to the 0.7 exponential power.

A summary of drainage area-peak discharge relationships for the Falls River is shown in Table 1, "Summary of Discharges."

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
FALLS RIVER					
At Falls River Pond Dam	17.18	1,140	2,050	2,580	5,070
Downstream of State Route 9	14.21	1,000	1,790	2,250	4,430
Downstream of Middlesex Turnpike	11.27	850	1,530	1,920	3,780
Upstream of Pratt-Read Factory	7.57	640	1,160	1,450	2,870
At the outlet of Wrights Pond	5.0	480	860	1,080	2,130
At the outlet of Messerschmidt Pond	4.0	410	740	930	1,830

A stage-frequency curve for the Connecticut River was taken from the Flood Insurance Study for the Town of Lyme (Reference 5). The development of this curve was based on information contained in a COE publication (Reference 3).

A summary of peak elevation-frequency relationships for the Connecticut River is shown in Table 2, "Summary of Stillwater Elevations."

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

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TABLE 2 - SUMMARY OF STILLWATER ELEVATIONS

FLOODING SOURCE AND LOCATION	ELEVATION (feet) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
CONNECTICUT RIVER				
At North Cove	6.7	9.2	10.5	15.0

Cross-section data for the Falls River were obtained from field measurements and topographic maps compiled from aerial photographs (Reference 6). Cross sections were located using COE guidelines (Reference 7). All bridges and culverts were field surveyed to obtain elevation data and structural geometry. Dams along the Falls River that were breached in June 1982 were assumed to be rebuilt as shown in drawings accompanying the applications for permits to rebuild. From a hydraulic standpoint, the reconstructed dams will be similar to those which were breached.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross section locations are also shown on the Flood Boundary and Floodway Map (Exhibit 2).

Water-surface elevations of floods of the selected recurrence intervals were computed using the COE HEC-2 step-backwater computer program (Reference 8). Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals. Flood levels over the crest of the Falls River Pond Dam spillway were used as starting water-surface elevations for the Falls River

Roughness coefficients (Manning's "n") were estimated by field inspection at each cross section. The channel "n" value for the Falls River was 0.050, and the overbank "n" value was 0.080.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in this study are shown on the maps.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

The National Flood Insurance Program encourages State and local governments to adopt sound flood plain management programs. Therefore, each Flood Insurance Study produces maps designed to assist communities in developing flood plain management measures.

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4.1 Flood Boundaries

To provide a national standard without regional discrimination, the 1 percent annual chance (100-year) flood has been adopted by FEMA as the base flood for flood plain management purposes. The 0.2 percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the 100- and 500-year flood plain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps (References 9 and 10).

For the areas studied by approximate methods, the boundary of the 100-year flood was delineated using the original Flood Insurance Study for the Town of Essex (Reference 11).

The 100- and 500-year flood plain boundaries are shown on the Flood Boundary and Floodway Map (Exhibit 2). In cases where the 100- and 500-year flood plain boundaries are close together, only the 100-year flood plain boundary has been shown. Small areas within the flood plain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

4.2 Floodways

Encroachment on flood plains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard. For purposes of the National Flood Insurance Program, a floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood plain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent flood plain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodway in this study is presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodway presented in this study was computed on the basis of equal conveyance reduction from each side of the flood plain. The results of these computations are tabulated at selected cross sections for the stream segment for which a floodway is computed (Table 3).

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Falls River								
A	500	333	2,427	1.1	14.8	14.8	15.8	1.0
B	760	203	1,294	2.0	14.9	14.9	15.9	1.0
C	1,160	132	1,361	1.9	15.0	15.0	16.0	1.0
D	1,295	120	1,288	2.0	15.6	15.6	16.4	0.8
E	1,880	150	1,374	1.9	17.4	17.4	18.4	1.0
F	2,700	202	1,854	1.4	21.1	21.1	21.9	0.8
G	3,342	200	1,227	2.1	21.3	21.3	22.1	0.8
H	3,511	214	1,993	1.3	21.6	21.6	22.4	0.8
I	3,750	125	1,428	1.8	22.2	22.2	23.0	0.8
J	4,750	212	1,972	1.3	22.3	22.3	23.1	0.8
K	5,300	200	1,902	1.4	22.7	22.7	23.6	0.9
L	6,100	190	1,653	1.4	22.7	22.7	23.6	0.9
M	6,320	150	877	2.6	23.0	23.0	23.9	0.9
N	6,480	192	1,792	1.3	23.3	23.3	24.2	0.9
O	6,830	78	886	2.5	23.7	23.7	24.7	1.0
P	7,130	80	906	2.5	23.8	23.8	24.7	0.9
Q	7,240	200	1,875	1.2	25.0	25.0	25.7	0.7
R	8,140	200	1,882	1.2	25.1	25.1	25.8	0.7
S	9,010	200	1,314	1.7	25.3	25.3	26.1	0.8
T	10,214	140	1,305	1.5	26.9	26.9	27.9	1.0
U	11,050	50	467	4.1	29.5	29.5	30.2	0.7
V	11,870	100	1,238	1.6	40.6	40.6	41.4	0.8
W	12,500	150	1,494	1.3	40.7	40.7	41.5	0.8

[1]Feet above Falls River Pond Dam

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF ESSEX, CT
(MIDDLESEX CO.)

FLOODWAY DATA

FALLS RIVER

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Falls River (continued)								
X	12,850	260	2,711	0.7	40.7	40.7	41.6	0.9
Y	13,710	160	1,644	1.2	40.8	40.8	41.7	0.9
Z	14,500	180	1,636	1.2	40.9	40.9	41.8	0.9
AA	15,620	200	2,077	0.9	41.0	41.0	42.0	1.0
AB	16,250	250	1,609	1.2	41.0	41.0	42.0	1.0
AC	17,160	40	275	7.0	46.7	46.7	47.6	0.9
AD	18,020	80	397	4.8	54.7	54.7	55.7	1.0
AE	19,296	110	875	2.2	60.4	60.4	61.3	0.9
AF	19,420	110	964	2.0	60.6	60.6	61.5	0.9
AG	21,700	36	308	6.2	74.9	74.9	75.9	1.0
AH	22,250	120	499	3.9	77.4	77.4	78.2	0.8
AI	23,810	420	1,145	1.3	79.2	79.2	80.1	0.9
AJ	24,700	430	1,143	1.3	80.3	80.3	81.1	0.8
AK	25,492	200	423	3.4	82.3	82.3	83.1	0.8
AL	26,740	50	332	4.4	91.9	91.9	92.8	0.9
AM	28,390	50	238	6.1	99.3	99.3	100.3	1.0

[1]Feet above Falls River Pond Dam

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

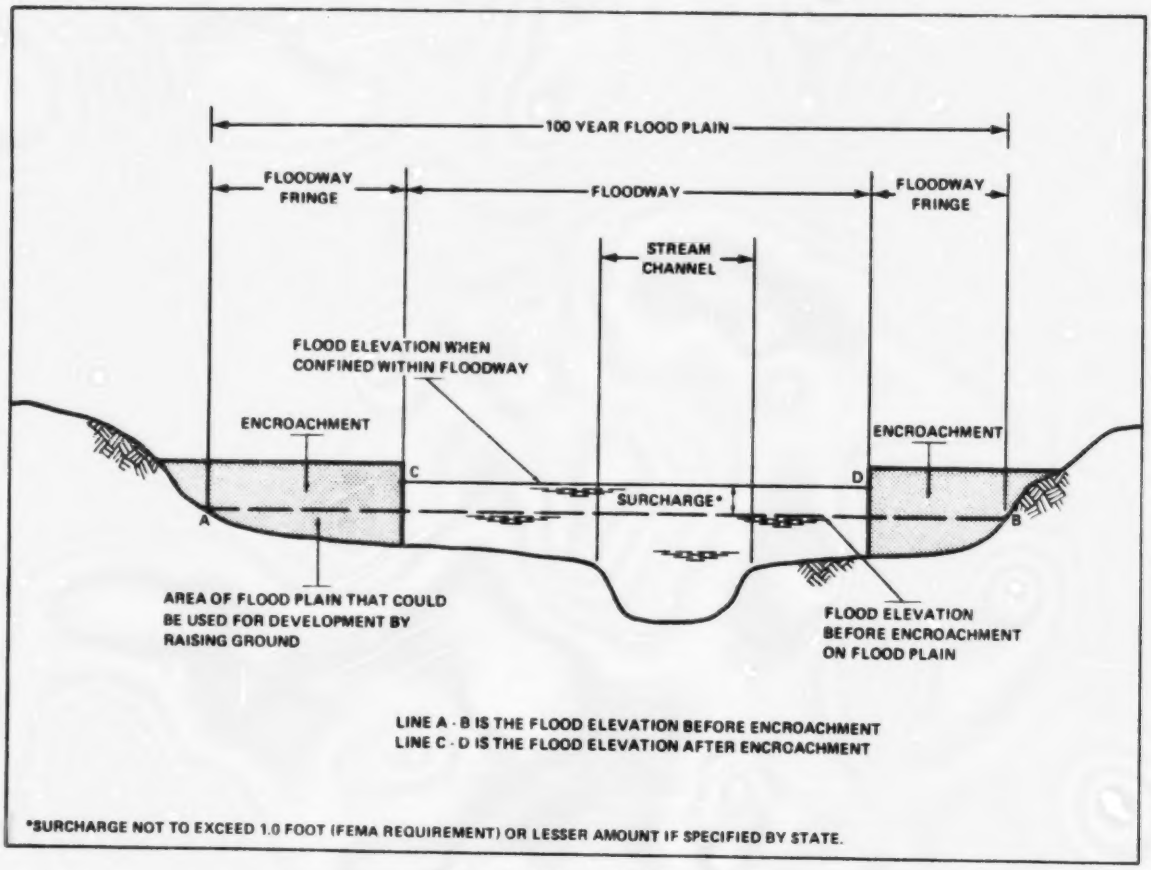
TOWN OF ESSEX, CT
(MIDDLESEX CO.)

FLOODWAY DATA

FALLS RIVER

As shown on the Flood Boundary and Floodway Map (Exhibit 2), the floodway boundaries were computed at cross sections. Between cross sections, the boundaries were interpolated. In cases where the floodway and 100-year flood plain boundaries are either close together or collinear, only the floodway boundary has been shown.

The area between the floodway and 100-year flood plain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to flood plain development are shown in Figure 3.


100 YEAR FLOOD PLAIN
FLOODWAY FRINGE
FLOODWAY
FLOODWAY FRINGE
STREAM CHANNEL
FLOOD ELEVATION WHEN CONFINED WITHIN FLOODWAY
ENCROACHMENT
ENCROACHMENT
C
D
SURCHARGE*
A
B
AREA OF FLOOD PLAIN THAT COULD BE USED FOR DEVELOPMENT BY RAISING GROUND
FLOOD ELEVATION BEFORE ENCROACHMENT ON FLOOD PLAIN
LINE A - B IS THE FLOOD ELEVATION BEFORE ENCROACHMENT
LINE C - D IS THE FLOOD ELEVATION AFTER ENCROACHMENT
*SURCHARGE NOT TO EXCEED 1.0 FOOT (FEMA REQUIREMENT) OR LESSER AMOUNT IF SPECIFIED BY STATE.

FLOODWAY SCHEMATIC Figure 3

5.0 INSURANCE APPLICATION

To establish actuarial insurance rates, data from the engineering study must be transformed into flood insurance criteria. This process includes the determination of reaches, Flood Hazard Factors, and flood insurance zone designations for each flooding source studied in detail in the Town of Essex.

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5.1 Reach Determinations

Reaches are defined as sections of flood plain that have relatively the same flood hazard, based on the average weighted difference in water-surface elevations between the 10- and 100-year floods. This difference may not have a variation greater than that indicated in the following tabulation for more than 20 percent of the reach:

Average Difference Between 10- and 100-Year Floods	Variation
Less than 2 feet	0.5 foot
2 to 7 feet	1.0 foot
7.1 to 12 feet	2.0 feet
More than 12 feet	3.0 feet

The locations of the reaches determined for the riverine flooding source of the Town of Essex are shown on the Flood Profiles (Exhibit 1) and summarized in Table 4.

In tidal areas, reaches are limited to the distance for which the 100-year flood elevation does not vary more than 1.0 foot. Using these criteria, one reach was required for the Connecticut River. The location of this reach is shown on the Flood Insurance Rate Map and summarized in Table 4.

5.2 Flood Hazard Factors

The Flood Hazard Factor (FHF) is used to establish relationships between depth and frequency of flooding in any reach. This relationship is then used with depth-damage relationships for various classes of structures to establish actuarial insurance rate tables.

The FHF for a reach is the average weighted difference between the 10- and 100-year flood water-surface elevations rounded to the nearest one-half foot, multiplied by 10, and shown as a three-digit code. For example, if the difference between water-surface elevations of the 10- and 100-year floods is 0.7 foot, the FHF is 005; if the difference is 1.4 feet, the FHF is 015; if the difference is 5.0 feet, the FHF is 050. When the difference between the 10- and 100-year flood water-surface elevations is greater than 10.0 feet, it is rounded to the nearest whole foot.

5.3 Flood Insurance Zones

Flood insurance zones and zone numbers are assigned based on the type of flood hazard and the FHF, respectively. A unique zone number is

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Connecticut River							
Reach 1	03,05	-3.8	-1.8	+4.5	040	A8	11
Falls River							
Reach 1	02,03	-2.7	-0.8	+4.5	025	A5	Varies
Reach 2	02	-2.8	-0.7	+2.3	030	A6	Varies
Reach 3	01,02	-2.1	-0.6	+1.9	020	A4	Varies
Reach 4	01	-1.1	-0.3	+1.3	010	A2	131

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

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TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF ESSEX, CT
(MIDDLESEX CO.)

FLOOD INSURANCE ZONE DATA

CONNECTICUT RIVER AND FALLS RIVER

associated with each possible FHF, and varies from 1 for a FHF of 005 to a maximum of 30 for a FHF of 200 or greater.

Zone A:	Special Flood Hazard Areas inundated by the 100-year flood, determined by approximate methods; no base flood elevations shown or FHFs determined.
Zones A2, A4, A5, A6, and A8:	Special Flood Hazard Areas inundated by the 100-year flood; with base flood elevations shown, and zones subdivided according to FHFs.
Zone B:	Areas between the Special Flood Hazard Areas and the limits of the 500-year flood; areas that are protected from the 100- or 500-year floods by dike, levee, or other water control structure; areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot; and areas subject to 100-year flooding from sources with drainage areas less than 1 square mile. Zone B is not subdivided.
Zone C:	Areas of minimal flooding; not subdivided.

Flood elevation differences, FHFs, flood insurance zones, and base flood elevations for the flooding sources studied in detail in the community are shown in Table 4.

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for the Town of Essex is, for insurance purposes, the principal result of the Flood Insurance Study. This map contains the official delineation of flood insurance zones and base flood elevations. Base flood elevation lines show the locations of the expected whole-foot water-surface elevation of the base (100-year) flood. The base flood elevations and zone numbers are used by insurance agents, in conjunction with structure elevations and characteristics, to assign actuarial insurance rates to structures and contents insured under the National Flood Insurance Program.

6.0 OTHER STUDIES

Flood Insurance Studies for the Towns of Lyme, Deep River, Old Saybrook, and Old Lyme have been completed (References 5, 12, 13, and 14). The results of this study are in exact agreement with the results of those studies.

The Flood Insurance Study for the Town of Westbrook is currently being prepared (Reference 15). The results of that study will be in exact agreement with the results of this study.

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7.0 LOCATION OF DATA

Information concerning the pertinent data used in preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, Federal Emergency Management Agency, Regional Director, Region I Office, J. W. McCormack Post Office and Courthouse Building, Room 462, Boston, Massachusetts 02109.

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14. Federal Emergency Management Agency, Federal Insurance Administration, Flood Insurance Study, Town of Old Lyme, New London County, Connecticut, Washington, D. C., January 16, 1980.

15. Federal Emergency Management Agency, Flood Insurance Study, Town of Westbrook, Middlesex County, Connecticut (Unpublished).

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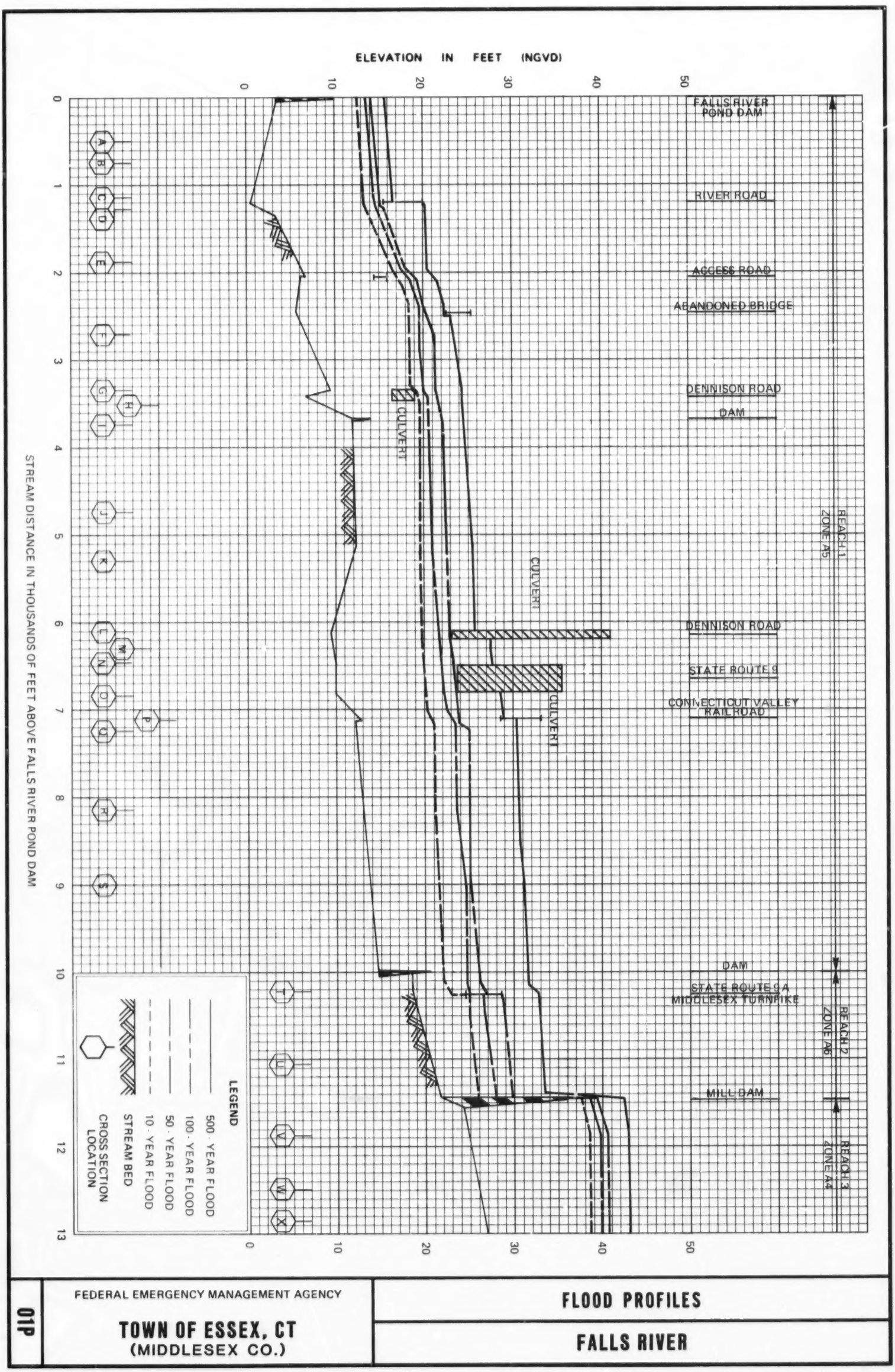

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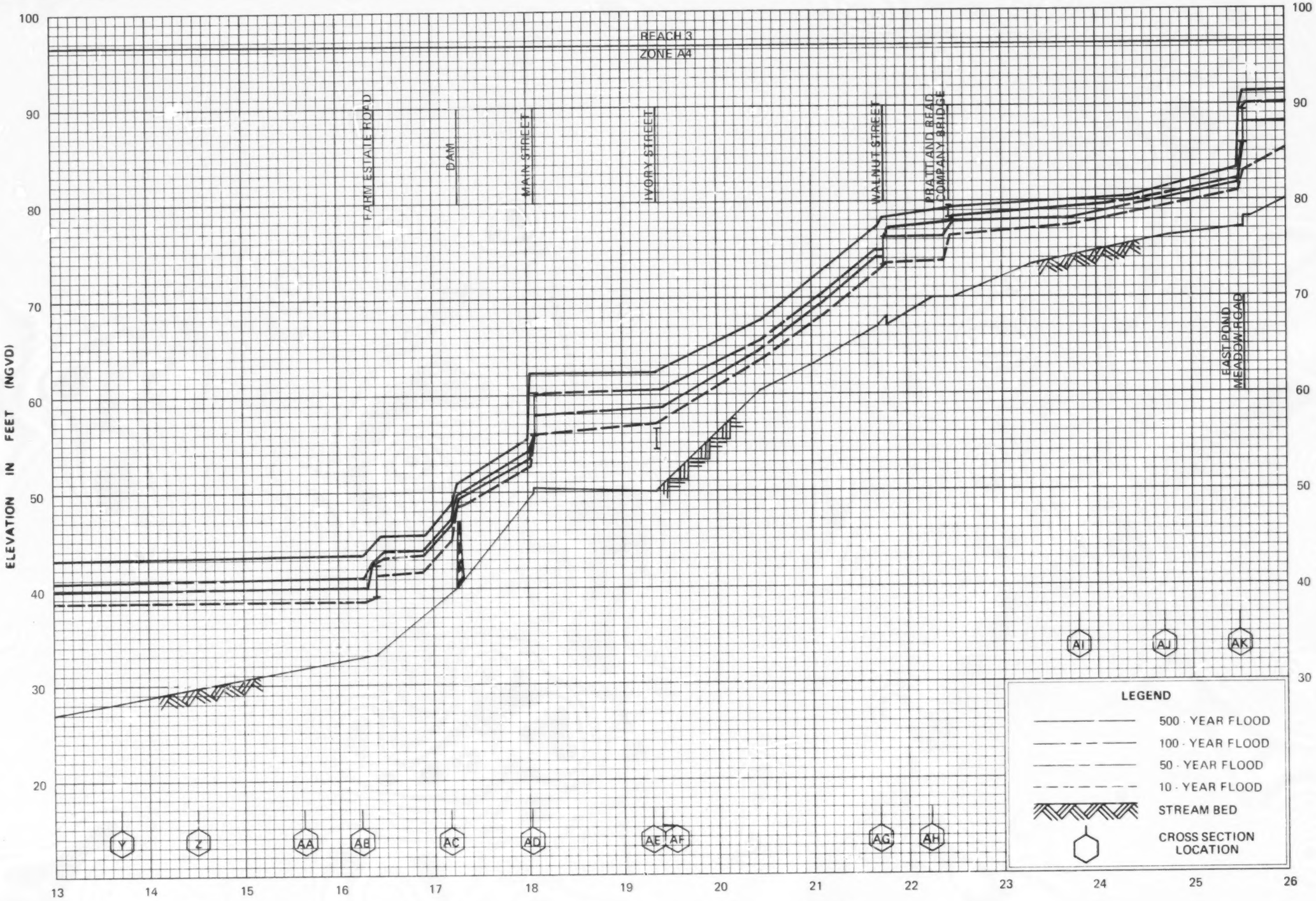

FLOOD PROFILES

FALLS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWN OF ESSEX, CT
(MIDDLESEX CO.)

02P

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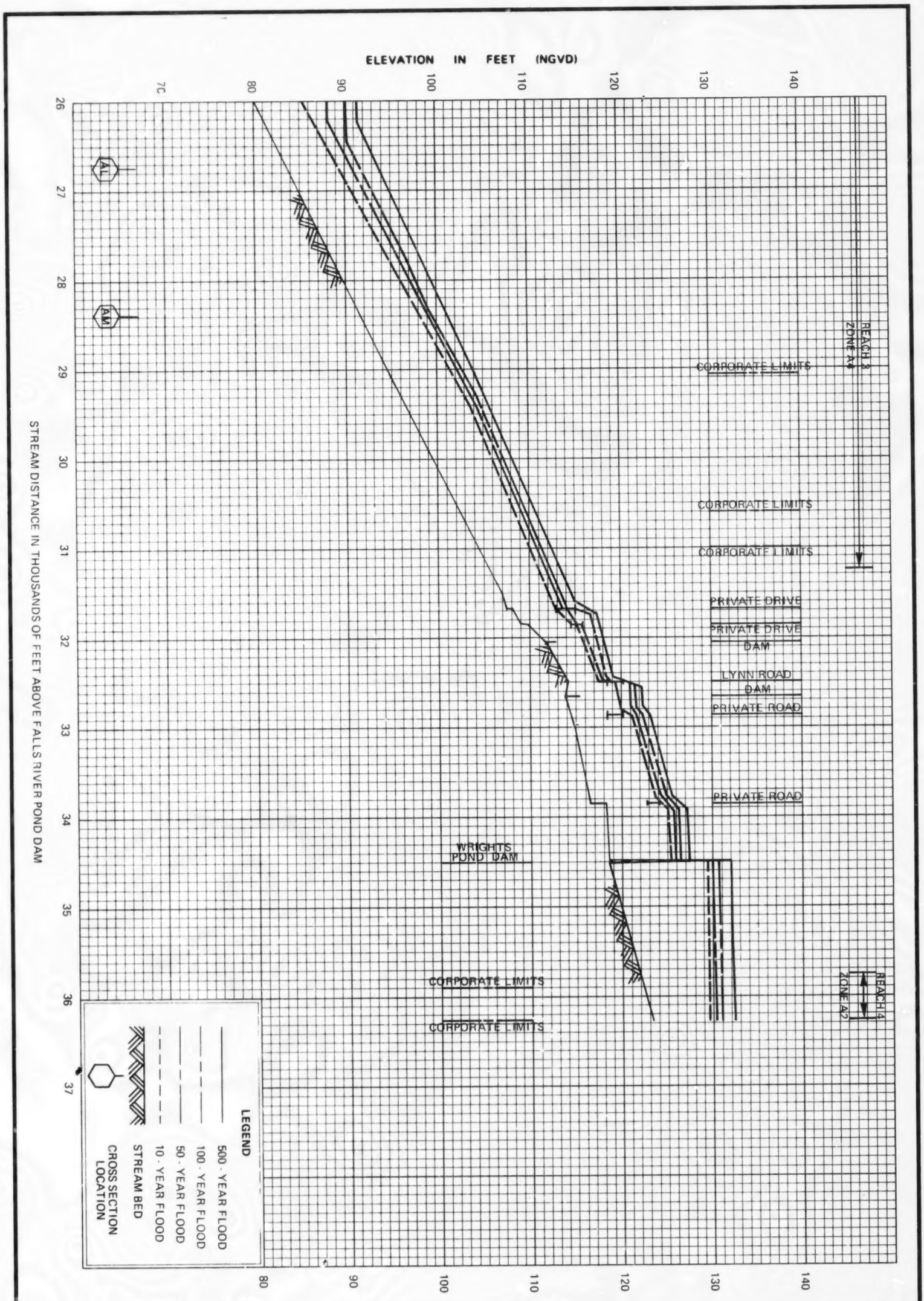

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